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A MECHANICAL CONSTRUCTION OF CONFOCAL CONICS.

By William R. Ransom.

By the following plan ellipses and hyperbolas whose foci are given may be drawn with very fair accuracy and very great readiness. The method was devised to facilitate plotting in elliptic coordinates, and it enables one to locate points in this system as freely as in the polar and rectangular systems.

Pins are driven at the foci, A, B, and a third at C, which is most conveniently taken midway between A and B. A string is passed loosely around the pencil point and the three pins in the way represented in the drawing. The pencil is then placed at the arbitrarily chosen point P, and the left hand, at H, draws the strings through the fingers until all slack is taken up. All is
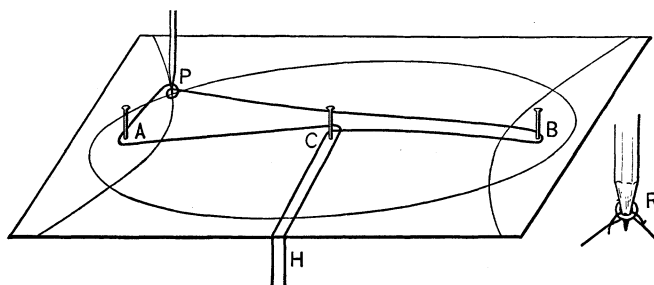
then ready for drawing either the ellipse or the hyperbola through P. Holding the strings tightly at H, draw them down across the edge of the board, and the pencil traces a branch of the hyperbola down to the axis. Or hold the string tightly against the board between H and C, while the pencil slips laterally in its loop, and we get the ellipse.

The loop about the pencil may be dispensed with in drawing the ellipse, or, in drawing the hyperbola, may be replaced by a small circular link just large enough to slip the lead into, tied loosely, as shown at R, to the two ends of the string severed at P. With a little care, however, the tendency of the pencil to slide in the loop is not great enough to make it necessary to prevent this slipping by inserting such a link.

Tufts College, Massachusetts,
April, 1902.

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